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भाग 5 आन्तरिक अपरुपण सामर्थ्य की परीक्षण पद्धति

Indian Standard

AUTOMOTIVE VEHICLES — BRAKE LININGS

PART 5 INTERNAL SHEAR STRENGTH — METHOD OF TEST

UDC 629·113 — 592 : 620·176

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1994 **Price Group 2**

Automotive Braking Systems Sectional Committee, TED 4

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Braking Systems Sectional Committee had been approved by the Transport Engineering Division Council.

Shear stress is generated on both disc pads and drum type brake linings while braking under normal service conditions. In the case of drum brake linings the shear stress on the linings increases by their geometry. For purposes of reference, the maximum stress induced should be taken while computing the stress values on the linings.

This Indian Standard is one in the series of standards being developed for brake linings of automotive vehicles. The other parts of the series which are important adjuncts to this standard are:

IS 2742 (Part 1) : 1994	Automotive vehicles — Brake linings (Non rubberised) : Part 1 Specification
IS 2742 (Part 2) : 1994	Automotive vehicles — Brake linings (Rubberised) : Part 2 Specification
IS 2742 (Part 3) : 1994	Automotive vehicles — Brake linings : Part 3 Methods of tests
IS 2742 (Part 4) : 1994	Automotive vehicles — Brake linings : Part 4 Co-efficient of friction — Method of test

While preparing this standard considerable assistance has been derived from the following specification issued by the International Organization for Standardization:

ISO 6311 : 1980 Road vehicles — Brake linings — Internal shear strength of lining material — Test procedure.

The committee responsible for the preparation of this standard is given in Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

AUTOMOTIVE VEHICLES — BRAKE LININGS

PART 5 INTERNAL SHEAR STRENGTH — METHOD OF TEST

1 SCOPE

This standard specifies the method of measuring the internal shear strength (stress) of brake lining materials for disc brake pads and drum brake linings used in automotive vehicle brakes.

2 TERMINOLOGY

For the purpose of the standard the following definitions shall apply.

2.1 Internal Shear Strength

It is ratio of the shear force to the stressed area.

2.2 Shear Force

The force vertical to the lining or pad, which causes the shearing (*see* Fig. 1).

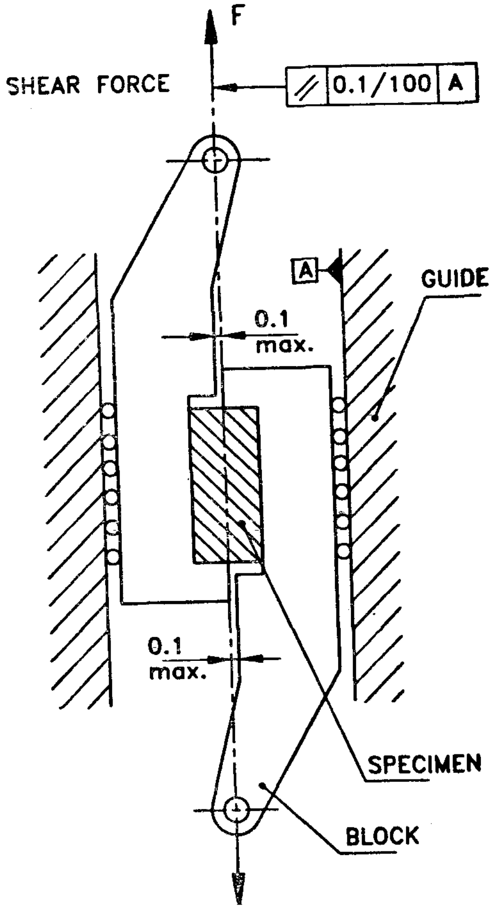

FIG. 1 TYPICAL TEST RIG

3 TEST APPARATUS

3.1 The apparatus comprises of a tensile or compression test machine and it shall be equipped with a fixture to apply the required load in the prescribed manner. The test machine shall be provided with an arrangement to register or record the load at shear.

3.2 The rate of loading shall be controlled in such a way that the load increases with an average rate of 4 500 ± 500 N/s.

3.3 It is further recommended that the unit controlling the rate of load functions in such a way that instantaneous rate is within the limits of 4 500 ± 2 250 N/s, when the shear force is above 5 000 N.

NOTE — In the case of hydraulically operated tensile or compression test machines the requirements may be met by setting the unloaded movement of the piston. The rate of speed, in mm/s, depends on the type of machine.

3.4 The fixture (*see* Fig. 1) shall consist of two blocks, which slide with as little friction as possible against one another, with a maximum movement of 0·1 mm. The friction between the block and the guide shall be minimal or capable of being recorded so that an allowance may be made in calculating the applied load. The blocks shall be grooved to receive the specimen. The specimen shall fill the grooves completely to prevent tilt under load.

3.4.1 It is essential that the shear force is applied through the centre of fixture and specimen and parallel to the guide within 0·1 mm at a length of 100 mm.

4 TEST PROCEDURE

4.1 Place the specimen in the fixture and gradually increase the load in a direction parallel to the direction of stress at normal service conditions.

4.2 The load shall not be applied in shocks and the rate of increase shall be as specified in **3.2** and **3.3**.

4.3 The test shall be carried out till the breaking up of the lining material occurs.

5 SAMPLING

5.1 At least five samples shall be taken for the test and the specimen chosen shall be such that it shears in a plane parallel to the plane or surface of stress at normal service conditions.

The specimen chosen for test shall be flat.

5.2 The dimensions of test specimen shall be as follows:

Length	20 ± 0·1 mm
Width	20 ± 0·1 mm
Thickness	5 ± 0·1 or 10 ± 0·1 mm

6 RECORD OF TEST RESULTS

6.1 The sample of lining shall be considered as passed if an average of at least five measurements of the maximum load applied, in Newtons, and the sheared area in square millimetres recorded complies with the requirements specified by the manufacturer.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Automotive Braking Systems Sectional Committee, TED 4

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